

WHAT IS CLAIMED IS:

1. An image pickup device including an array of a plurality of pixels including photoelectric conversion portions for accumulating signal charges
5 generated by photoelectric conversion and an amplifying transistor for amplifying the signal charges generated by said photoelectric conversion portion to output the amplified signal charges, said device comprising:
 - 10 a junction-type field effect transistor, including a main electrode made of first semiconductor region of a first conduction type connected to control electrode region of said amplifying transistor included in two pixels adjacent
15 to each other, and a control electrode region made of second semiconductor region of a second conduction type opposite to the first conductive type having same electric potential as that of semiconductor region of the second conduction type included in a
20 semiconductor region forming said photoelectric conversion portions, said a junction-type field effect transistor connecting said first semiconductor region in series; and
an electric potential supplying circuit for
25 supplying predetermined electric potential to the main electrode region of said a junction-type field effect transistor.

2. An image pickup device according to claim 1,
further comprising a transferring transistor for
transferring the signal charges accumulated in said
photoelectric conversion portion included in said
5 pixel.

3. An image pickup device according to claim 1,
wherein said first semiconductor region constitutes a
part of said photoelectric conversion portion.

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4. An image pickup device according to claim 1,
comprising a potential control circuit for
controlling electric potential of said first
semiconductor region by means of capacity coupling.

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5. An image pickup device according to claim 4,
wherein said potential control circuit is wiring
connected to the main electrode region of said
amplifying transistor.

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6. An image pickup device according to claim 2,
comprising a potential control circuit for
controlling electric potential of said first
semiconductor region by means of capacity coupling.

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7. An image pickup device according to claim 6,
wherein said potential control circuit is wiring

connected to the gate electrode region of said transferring transistor.

8. An image pickup device according to claim 1,
5 wherein said potential supplying circuit can selectively supply first electric potential and second electric potential different from the first electric potential, said image pickup device further comprising a first driving circuit for controlling
10 said potential supplying circuit so as to supply the first electric potential to a plurality of the pixels from which signals are read, and to supply the second electric potential to a plurality of the pixels from which no signals are read.

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9. An image pickup device according to claim 1, further comprising:

a second driving circuit having a first mode in which electric potential is applied to said main
20 electrode of said a junction-type field effect transistor from said potential supplying circuit to connect in series said first semiconductor region included in each of the plurality of pixels and thereby reset said first semiconductor regions, and a
25 signal obtained by the reset is output from said amplifying transistor, and a second mode for reading a signal corresponding to said signal charges

obtained by said photoelectric conversion portion
from said amplifying transistor; and

a differential circuit for processing a
difference between the signal obtained in said first
5 mode and the signal obtained in said second mode.

10. An image pickup device according to claim
1, wherein each of said plurality of pixels includes
an amplifying transistor common to a plurality of
10 photoelectric conversion portions and a transferring
transistor for connecting the plurality of
photoelectric conversion portions to said common
amplifying transistor.

15 11. An image pickup device including an array
of a plurality of pixels including photoelectric
conversion portions for accumulating signal charges
generated by photoelectric conversion, an amplifying
transistor for amplifying the signal charges
20 generated by said photoelectric conversion portion to
output the amplified signal charges and a junction-
type field effect transistor comprising:
a first main electrode made of first semiconductor
region of a first conduction type connected to
25 control electrode region of said amplifying
transistor, a control electrode region made of
second semiconductor region of a second conduction

type opposite to the first conductive type having same electric potential as that of semiconductor region of the second conduction type included in a semiconductor region forming said photoelectric conversion portions, and a second main electrode made of third semiconductor region of a first conduction type connected to a potential supply portion for supplying a predetermined electric potential.

10 12. An image pickup device according to claim 11, comprising a potential control circuit for controlling electric potential of said first semiconductor region by means of capacity coupling.

15 13. An image pickup device according to claim 12, further comprising a transferring transistor for transferring the signal charges accumulated in said photoelectric conversion portion included in said pixel, wherein said potential control circuit is a
20 line connected to the gate region of said transferring transistor both for controlling said transferring transistor and for controlling electric potential of said first semiconductor region by means of capacity coupling.

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14. An image pickup system comprising:
an image pickup device defined in one of

claims 1 and 13;

a lens for focusing light onto said plurality
of pixels;

an analog-to-digital conversion circuit for
5 converting signals from said plurality of pixels to
digital signals; and

a signal processing circuit for processing
signals from said analog-to-digital conversion
circuit.

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